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THE SOYBEAN CYST NEMATODE

The soybean cyst nematode is a small, parasitic worm that attacks the roots of soybeans. It also attacks lespedeza, common vetch, snap beans, adzuki beans, lupine, and several species of weeds.

It was first discovered in this country in 1954 in North Carolina. Since then, it has been found in Arkansas, Florida, Illinois, Indiana, Kentucky, Louisiana, Mississippi, Missouri, Virginia, and Tennessee. State and Federal plant pest control officials are conducting extensive surveys to determine boundaries of infested areas.

Soybean plants infested with soybean cyst nematodes become yellow, stunted, and produce low yields. In heavily infested areas, damage to susceptible varieties may be so severe that crops are not harvested. Losses have increased each year since the soybean cyst nematode was first discovered in this country.

Growers in infested areas of Arkansas, Missouri, North Carolina, and Tennessee may suffer yearly crop losses of up to 60 percent if no control measures are used. This figure does not include losses suffered when farmers are forced to take land out of soybean production because of the nematode.

HOW IT LIVES

The soybean cyst nematode has a three-stage life cycle: egg, larva, and adult. The eggs are enclosed in lemon-shaped cysts smaller than a pinhead. These cysts, which are dead carcasses of the female, may contain up to several hundred eggs and larvae. The cyst walls are highly resistant to decay and the eggs may remain alive within the cyst walls for many years.

When the soil temperature is above 60 degrees—if soybean plants are present—the larvae leave the cysts and attach themselves to the soybean roots

where they begin feeding. After the males mature, they leave the roots and fertilize the females which remain attached to the roots. The females are pearly white at first but change color as they mature and finally turn yellow. When the roots of the soybean plant are disturbed, the mature cyst may fall loose.

HOW IT SPREADS

The soybean cyst nematode can move through the soil by its own efforts only a few inches a year. However, it can be spread easily by soil attached to farm and construction equipment, root crops, nursery plants, containers, topsoil, infested seed, and other articles.

WHAT IS BEING DONE

The U.S. Department of Agriculture and the affected States are co-operating to combat the soybean cyst nematode by: conducting surveys to locate infestations, enforcing quarantine regulations to prevent further spread of the nematode, developing control measures to combat the pest, and carrying out research to develop suitable nematode-resistant soybean varieties.

SURVEYS

Surveys are conducted to detect new areas of infestation and to determine the outer limits of areas already known to be infested.

The principal survey method is to collect soil samples from areas believed to be infested. Also, soybean plants are examined for females and cysts attached to the roots. Trained observers can find cysts on roots without the aid of a magnifying glass.

Assistance in identifying the nematode is available through State and

Cover Photo: Stunted, yellow soybeans show typical symptoms of severe cyst nematode damage.

THE SOYBEAN CYST NEMATODE

(ALL FIGURES GREATLY ENLARGED)

A, Adult male nematode.

B, Mature cysts.

C, Larvae entering young roots.

D, Root with females protruding.

(Females change from white to yellow, darken as they mature.)

E, Females, at various stages of development, attached to root.

F, Female exuding gelatinous egg mass.

G, Eggs in cyst

H, Larva in egg (highly magnified).



Federal experiment stations, county agricultural agents, and State and Federal pest control officials. Identifications from States and Counties not previously known to be infested are confirmed by USDA specialists at Beltsville, Md.

CONTROL MEASURES

Resistant varieties are the most effective control for the soybean cyst nematode. The U.S. Department of Agriculture and cooperating State agricultural experiment stations have released three resistant soybean varieties—Pickett, Dyer, and Custer. On soil infested with soybean cyst nematodes, these resistant varieties have shown as much as a 50 percent higher yield than similar susceptible varieties.

On non-infested soils, Pickett is similar to Lee, Dyer is similar to Hill, and Custer is similar to Scott in seed holding, yield, height, and some other characteristics. Pickett takes as long to mature as Lee and, like Lee, is resistant to bacterial pustule, wildfire, and target spot. Dyer, like Hill, is resistant to the root-knot nematode. Custer matures 4 days before Scott. Unlike Scott, it is resistant to phytophthora rot.

If you do not use resistant varieties, control the soybean cyst nematode by rotating soybeans with crops that are not susceptible. Soybean cyst nematodes can feed and reproduce only on host plants. Significant increases in soybean yields have been obtained by planting infested land to corn or another resistant crop for 2 years, followed by soybeans for 1 year.

Several nematocides that are applied before planting are effective in controlling the soybean cyst nematode. The high cost of these chemicals, however, usually makes them impractical.

QUARANTINE REGULATIONS

State and Federal quarantine regulations are designed to prevent the soybean cyst nematode from being accidentally brought into nematode-free areas by means of contaminated soil, used farm machinery, other soil moving equipment, transplants, and certain other agricultural products. Quarantine regulations prohibit the movement of such articles from an infested area unless they are accompanied by an official certificate indicating they are free of the pest or that approved treatments have been applied to eliminate the risk of spreading the soybean cyst nematode.

HOW YOU CAN HELP

You can help control and prevent the spread of the soybean cyst nematode by:

1. Helping uncover new infestations.
Contact your county agent or plant pest control official if you see symptoms of yellow, stunted plants, reduced yields, or other unexplained crop losses.

2. Following recommended cropping practices.

Do not grow susceptible soybean varieties and other host crops on infested land more often than once every third or fourth year. Do not plant seed produced on infested land unless it is certified as free of the pest.

3. Guarding against further spread of the nematode.

Do not move used farm machinery from an infested to uninfested area before cleaning it. Follow recommended procedures when harvesting and handling regulated crops so that they will not be contaminated by infested soil. Market produce only in clean containers.

Prepared by Crops Research Division and Plant Pest Control Division,
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